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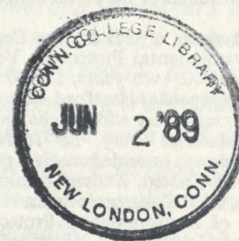
CONNECTICUT

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The Citizens' Bulletin of the Connecticut Department of Environmental Protection

Our Visiting Bald Eagles



March/1989

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Cover by Michael D. Klein

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Commissioner
Leslie Carothers
Director Info & Ed
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Editor
Robert Paier
Contributing Editor
Alan Levere
Graphics
Rosemary Gutbrod
Composition
Caryn Furbush
Circulation
Olive Tyghter
Business Manager
Donna Fadoir

Phone
566-5524

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Editor's Note

Connecticut is not exactly famous for being one of the big-time wilderness states. On the other hand, it is still quite possible to walk down a lonely trail in one of our state parks or forests and get someplace where it is quiet, where there is nobody there but you, and where it stays that way for as long as you feel like sticking around. You might have to put some effort into finding a place like that, and you might have to time your trip for the off-peak hour, but it can be done. And it should be done.

Solitude, and particularly the solitude of the forest, is where we must go to recharge the batteries. It is vitally important that we return now and then to silence, to simplicity, away from the convoluted, multi-leveled, now-you-see-it, now-you-don't 20th century phantasmagoria. In the forest, at the end of that lonely trail, things are what they are, and that's all they are. Things rest in their original simplicity out there. Simple and true and very, very powerful. This tree is just this tree. This rock is just this rock. This brook is just this brook. Just this, just this. That "just this" is the source of all power and mystery. And, of course, just because it is so simple and obvious, we usually miss it entirely.

And so, even in highly-developed, densely-populated little Connecticut, that power and simplicity and deep mystery is always available to us. We don't have to hike into the Arizona desert or climb the mountains of Alaska. It's right here, waiting for us.

Finding that place of mystery and power is both our joy and our sacred obligation. But then, having found it, having recharged our batteries, we walk back down the trail, and begin again.

R.P.



The bald eagles that we see here in Connecticut generally come from Maine, Massachusetts, New York, and Canada. (Photo: Irene Vandermolen)

What Would You Like to Know about the Bald Eagle?

by
Rita M. Duclos
Wildlife Biologist

The Shepaug Bald Eagle Observation Area, now in its fourth season, has provided a unique opportunity for visitors to observe and learn about Connecticut's wintering bald eagles. To date, almost 20,000 visitors have taken advantage of this opportunity. How do the site's research assistants and numerous volunteers always have a ready, accurate answer to a visitor's questions? The following questions (and answers) are part of their training packet. The questions are truly those most frequently asked at the Observation Area and during phone inquiries received by the Wildlife Bureau. Each year the list is reviewed and inevitably questions are added. In four years, the list has doubled in size. As long as the public keeps asking, this list will keep growing.

1. Where do Connecticut's winter eagles come from?
The eagles come from Maine, Massachusetts, New York, Ontario, Quebec, and the Maritime Provinces. Those from New York and Massachusetts usually don't stay here for long periods of time.

2. Why do the eagles come to Connecticut during the winter? Why do their numbers increase as winter progresses? Bald eagles are responding to weather patterns and their consequences. Severe cold up north freezes up bodies of water, locking eagles out of fishing areas. They move south looking for food. As the winter becomes more serious up north, more eagles turn south. If Connecticut should have a severe cold spell causing ice lockup, the eagles will continue south to open water.

3. How far south will eagles go? The eagles will fly as far as it takes to reach open water or a steady food supply. Northern eagles will travel to Virginia and Maryland if necessary.

4. What foods do bald eagles commonly utilize? The primary food source of the bald eagle is fish. Other foods of importance to bald eagles include waterfowl, carrion, and small game.

5. What is the size of Connecticut's wintering bald eagle population? On the average, 40 individual birds, although the numbers are increasing each year. During

the winter of 1987-88, up to 90 bald eagles were seen in the state. Most of this wintering population is found along the Connecticut River.

6. Why are bald eagles endangered? Reasons for the decline are the following: human disturbance at nest sites; loss of nesting trees; loss of waterside habitat due to human occupation; pollution of food, especially by pesticides, with subsequent ill effects on health and reproductive efforts; and finally, intentional and accidental shooting and trapping of eagles in the western grazing country.

7. Why is it important to safeguard wintering eagles? The stress of winter weather makes it necessary to assure that preferred winter feeding areas are protected. If birds are frequently disturbed from feeding, and forced to travel to a different area for food, it may result in a life threatening situation for the eagles.

8. What is eagle harassment? Harassment may be defined as any activity that interrupts a life supporting activity, such as feeding, resting, or breeding.



The Shepaug Bald Eagle Observation Area is the only area in the state where eagles may be safely viewed. The effect of this observation on the eagle population is being monitored. (Photo: Irene Vandermolen)

9. Does the observation area disturb the eagles? The observation area is located at a recommended distance from their favorite perch sites. Visitors are advised to remain in their vehicles until they reach that shelter. Visitor access to any other area is prohibited. Eagle reaction to visitor presence is being monitored.

10. Do eagles nest in Connecticut? No, not at this time. The last known nest was in the 1950s in the town of Essex, Middlesex County. Connecticut never has been a favorite breeding area for eagles.

11. How big are bald eagles' nests? Nests are large, commonly five to seven feet wide and three to five feet deep, built in trees 10 to 150 feet above ground. Bald eagles may also nest on rocky cliffs and, in rare instances, on the ground.

12. How big is a bald eagle? Bald eagles range in length from 34 to 43 inches and have wing spans from six to seven and a half feet. As with other birds of prey, males are slightly smaller than females.

13. How much does a bald eagle weigh? Males weigh between eight to nine pounds. Females are larger with weights between 10 to 14 pounds. Golden eagles are similar in both length and weight, but are not closely related to bald eagles.

14. How long do bald eagles live in the wild? Bald eagles are suspected to live from 25 to 30 years in the wild.

15. At what age do bald eagles mature? Bald eagles reach sexual maturity at four to six years of age.

16. Which eagles are male and which are female? Sexes appear identical, except females are slightly larger.

17. How many eggs do bald eagles lay? The average clutch size is two dull white eggs. Competition between young often leads to the death of one nestling. However, bald eagle pairs in the Chesapeake Bay area have been known to successfully fledge up to four young in recent years.

18. At what age do bald eagles get their white heads? Bald eagles obtain their adult plumage — white head and tail — when they are four to five years of age.

19. How well can a bald eagle see? The diameter of an eagle's eye is comparable to that of a grown man, but its vision is roughly six times better. Some research suggests that in order to clearly see form, distance, and motion, eagles may not have color vision.

20. Why doesn't Connecticut have an eagle reintroduction program? Due to eagles' tremendous success in



In the wild, bald eagles may live from 25 to 30 years. They reach sexual maturity at four to six years of age. (Photo: Leonard Lee Rue)

neighboring New England states, *all* reintroduction programs are to be discontinued in 1989. On a practical note, these programs are expensive (\$5000 or more per bird) and require personnel assigned solely to that activity. Even if Connecticut had the money for such a program, its habitat is not ideal. Breeding eagles usually require solitude, which is a rare commodity in this state. While such a program would delight an uninformed public, the effort would probably not be in the best interest of the eagles. The welfare of the endangered species is more important than cultivating the public's interest.

21. Do bald eagles mate for life? They are believed to mate for life. If one dies the other will renest if it finds a new mate.

22. What are the five states in which the bald eagle is listed as "threatened"? The bald eagle is currently listed as "threatened" in Washington, Oregon, Florida, Minnesota, and Maine. It is listed as "endangered" in the remaining 43 states. Bald eagles are *not* endangered in Alaska, and have never existed in Hawaii. Their steady recovery may lead to a declassification in some states in the near future.

23. How much weight can a bald eagle carry? Bald eagles can carry up to four pounds in flight. They are able to catch larger prey but they can't remove it from the site where it was caught.

24. Can individual eagles be distinguished? There is no easy way to tell individual eagles apart. The only guaranteed method is by reading the tag number on a marked eagle.

25. Why do eagles wintering in Connecticut seem so inactive? Winter is a physically stressful time for the eagles and therefore the conservation of energy is important for the survival of individual birds. The condition of adult birds in springtime will affect their reproductive success, so the eagles' winter "inactivity" is also important to the species' survival.

26. How much do bald eagles eat? Bald eagles consume between one and one and a half pounds of fish or other meat daily.

27. Why do the bald eagles come to the dam? Doesn't the noise scare them? The bald eagles are attracted to this section of the river because the turbines of the dam

keep the river clear of ice, making it possible for the eagles to fish. Also, when the turbines are operating, they cause fish to come to the surface, thus making it easier for the eagles to feed.

28. How fast can bald eagles fly? During migration, eagles have been clocked at between 36 and 44 m.p.h.

29. Why can't the terms perch, roost, and nest be used interchangeably? These terms refer to three separate activities. *Perch*: A bird perches, or sits, during the day when it isn't flying for feeding. *Roost*: A roosting bird is one which is spending the night in one spot, in order to sleep. The place where this is done is called a roost site. Roost sites and perch sites are typically not the same. In fact, a roost site may be up to five miles away from a perch site. *Nest*: Nesting is another word for breeding. Bald eagles nest in the spring and summer. At this time, there are *no* nesting bald eagles in the state of Connecticut.

30. Why do birds preen? A preening bird is one which is taking care of its plumage. In order to keep the individual feathers whole and water repellent, a bird needs to clean and comb them, conditioning them with oil from a gland at the base of its tail.



How well can a bald eagle see? About six times as well as you can, if you don't wear glasses. (Photo: Mark Wilson)

Sweet Victory

by

Alan Levere

Senior Environmental Analyst

NOTHING IS AS SWEET as victory. Losing is no fun. When a loss occurs, there usually is a hard lesson to be learned somewhere. A loss marks the passing of time, an ending, a signal that something is gone.

Still, victories occur regularly when it comes to preservation. And it seems that many preservation victories are the result of education. With education comes the understanding of a resource's value. This month, with those thoughts in mind, our description is of an inland-wetlands field guide entitled *Freshwater Wetlands: A Guide To Common Indicator Plants of the Northeast*.

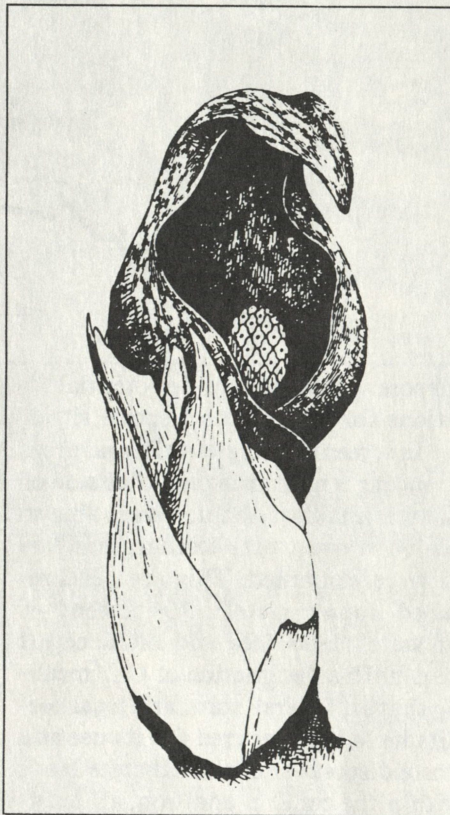
The author is Dennis W. Magee. The artist is Abigail Rorer. The book is both useful and educational. The author states that his intent "is to serve the needs of the persons charged with enforcing wetland regulations, as well as those interested in wetlands conservation and ecology but having little or no formal training in botany." There is a fine glossary of botanical terms that has helped me considerably.

In Massachusetts, wetlands are delineated completely by vegetative type. So, if you find a certain plant type that is recognized as a wetland plant — let's say cattails — you have wetland under the extent of that plant cover.

In Connecticut, inland-wetlands and watercourses are delineated by soil type. That is, there are certain soil types that are protected by law as wetlands. But, because one soil will not cover the entire extent of the watercourse, the use of vegetation and hydrology can be employed successfully

in determining these wetland boundaries.

What are these plants that indicate wetlands? The 182 species described make up the vast majority of



Skunk cabbage (Symplocarpus foetidus) from Freshwater Wetlands. Drawing by Abigail Rorer.

the commonly encountered wetland indicator plants in our state. In addition, many other plants are listed and referenced. In all, 621 plant descriptions are included.

How can this help you? We know that on wetland maps the boundaries often are inexact at the single-lot scale. A soil survey is needed to identify the exact extent of the wetland. In this case, you must become familiar with the site by walking it. The detail of the soils or wetland map you have will be sketchy, but you have a rough idea of the boundaries. As you walk through, you recognize a few grasses, a bush, a few ferns, and some tall "weeds." From the guide book, you recognize these as wetland indicator plants.

These plants grow in areas that are

greater or lesser in extent than the wetland map seems to indicate. Does it mean the area is absolutely a wetland? Not necessarily. Some species have different frequencies of occurrence at the wetland fringe, a little beyond the fringe, and so on. (Those frequencies will be discussed in a later column.) But the recognition of the plants, in conjunction with the wetland map and your direct observation, will help you understand the extent of the finalized soil survey.

Because I am not a soil scientist, it is easier for me to assess what I see above ground than it is to bring out a shovel, dig a hole, and try to assess a soil type. (I know more than one soil scientist, however, who looks for the limits of wetland plant growth by digging test holes.)

The other side of identification is just to know the names of the plants. It may take a few different plant reference books to get the full background on why some species was named as it was, if it is native to the area, and so on. But you must start somewhere and this is one of the better books available.

The loss of a wetland involves more than just filling in a "swampy" area. The effects have been spelled out in numerous places before. The idea is that if we know which plants constitute wetland indicators, we are a little more aware of the extent of wetland habitat. And that education can help to insure a victory against some future loss of other wetlands.

And nothing is as sweet as victory.

FRESHWATER WETLANDS is in softcover, with 246 black-and-white illustrations. It sells for \$10.95. In addition, there is a *Coastal Wetlands Guide* with the same format for \$12.95. To order, please include \$2.00 per order for handling and 7 1/2 percent sales tax. Our address is: DEP Natural Resources Center, Publication Sales, Room 555, 165 Capitol Avenue, Hartford, CT 06106. Phone (203) 566-7719.

DEP Releases Ash Report

by

Tessa Gutowski

Principal Environmental Analyst

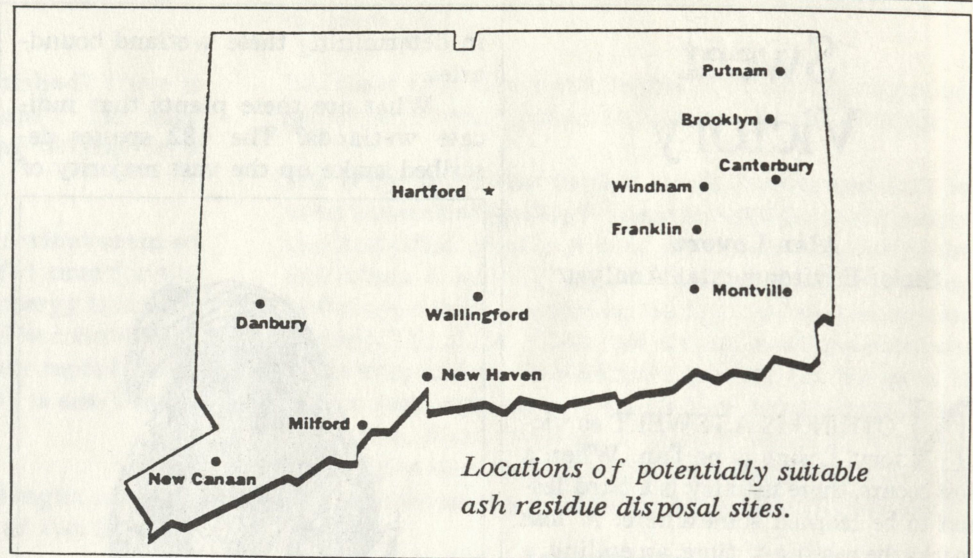
IN JANUARY 1989, the DEP released a report entitled "Identification of Potential Ash Residue Disposal Sites." This was done pursuant to Public Act 88-352, which mandated a report on the estimated landfill capacity required for incinerator ash.

The report describes the characteristics and quantities of the ash residue to be landfilled and the four-stage screening process used to identify candidate sites. It lists the sites screened and describes those found to be most suitable for ash residue disposal.

Ash residue is what is left after the combustion of mixed municipal solid waste at a resource recovery facility or municipal solid waste incinerator. It is made up of bottom ash from the burning chamber and fly ash, or "air pollution control residue."

Incinerator ash contains metals, which do not burn and are toxic. Without proper management, land disposal of ash could result in pollution of ground and surface waters. Early results of leachate sampling at one ash landfill in Connecticut reveal heavy metal concentrations below levels of concern under state and federal standards. The DEP has proposed stringent siting and engineering controls for land disposal of incinerator ash. The proposed regulations, which call for the lining of both ash and garbage landfills, list technical specifications for leachate from resource recovery ash residue. A public hearing regarding these proposed regulations has been scheduled for March 10, 1989.

In September 1988, the DEP released its proposed "Solid Waste Management Plan," which included a matrix and screening process to examine the natural and cultural features of the land area of the entire state. The



purpose was to determine potential locations for ash residue disposal sites.

In screening for sites, all land areas extending a half mile on either side of all swimmable/fishable rivers able to receive waste water discharges (Class B) were examined. This area encompassed approximately 10 percent of the state's land area and included all areas with a designation of GC (meaning that all federal, state, and local permits have been secured for its use as a waste disposal site) and all state lands within the zone. In addition, all existing landfills with permitted capacity were included in the review. With this process, DEP staff evaluated 92 potential ash residue disposal sites along Class B waterways or adjacent to existing landfills.

Of these 92 sites, 13 were found to be potentially acceptable for ash residue disposal. Over the next 20 years, an estimated 250 acres will be needed to handle the 24 million cubic yards of ash residue expected from trash-to-energy facilities. The DEP estimates that the 13 sites have a total capacity of 23-38 million cubic yards.

The 13 sites are scattered across Connecticut. Seven are associated with existing landfills, with four of these already receiving ash. The four largest are located in the eastern half of the state. The Susquehanna Plains area of Franklin/Windham has the greatest capacity potential with 175 acres. Land adjacent to the Putnam landfill,

with 59 acres, is second. A parcel in Canterbury is limited to 38 acres in size so that the disposal area would not be visible from town. A fourth site involves a 35-acre parcel in Brooklyn near the Pomfret town line.

Smaller parcels, most of which are associated with town landfills, are also identified in Milford, Windham, Montville, Hartford, Wallingford (two sites), Danbury, New Haven, and New Canaan.

The DEP hopes that this report will help assure the acquisition and development of well-sited, well-designed ash residue disposal sites. The next step is up to the state Legislature, where the issues of siting, override of local zoning, local controls, and host compensation will be addressed.

While provisions are being made to properly dispose of ash residue, the DEP hopes to reduce reliance on land disposal in the coming years. Studies at the Environmental Research Institute (ERI) at The University of Connecticut, as well as New York, are addressing the prospects and methods for ash reuse. The ERI will also be evaluating the effects of removal of different waste products from the waste stream on the resulting ash residue quality and subsequently how these changes relate to its reuse. Copies of the report may be obtained by contacting the DEP's Local Assistance and Program Coordination Unit at 566-2860.



The park on the J.B.Williams Reservoir property in Glastonbury is a testimony to the foresight of the residents of that town. (Photo: Joseph Voboril)

A Legacy of Land

The Silver Anniversary of a Park

by
Judith D. Prill
Program Coordinator
State Outdoor Recreation Fund

USERS OF PARK AND RECREATION LANDS often take for granted the availability of these areas. If it was not for the foresight of certain dedicated individuals, many of these areas would not exist as open space today.

In 1837, William Cullen Bryant predicted that New York City would one day be a great metropolis and would some day need open space park land. Due to his efforts and the efforts of many others, a tract of land surrounded by farms and woodlands over two miles from the city was

purchased. That acreage is now Central Park.

IN 1962, DR. CHARLES PARTON and the Glastonbury Conservation Commission recommended to residents of that town that they also look to the future and acquire 200 acres of land located at the geographic center of town. Although the town at that time still had a lot of privately owned open space, the Conservation Commission foresaw Glastonbury as a Hartford suburb with a complex of roads, residential developments, and commercial centers.

The tract of land proposed for acquisition by the town was the J.B. Williams Reservoir property off Neipsic Road, an area known for centuries for its springs. As far back as the 17th century, Indians from both the local Hoccanum and Podunk tribes as well as other tribes from further away came for the waters which they believed to have medicinal qualities. Later in the town's history this same water was used because of its purity by the J.B. Williams Company in their manufacture of shaving soap.

The J.B. Williams Reservoir property's central location as well as its potential for a variety of recreational opportunities made it an ideal site for a park. However, it wasn't easy convincing the town's people of the need for this acquisition. Many people felt the estimated purchase price of \$1,000 per acre was too high for "just a park." Those opposing the purchase felt there was already a great deal of "open space," although, most of this was privately owned (only 25 acres was owned by the town at the time). Some voiced the opinion that the town buy the property but keep an option to use it for school, firehouse, or other non-park purposes. Negative comments, such as "How many residents like to walk around and look at birds and trees and such?" were heard. Another opponent to the acquisition stated that he couldn't really see the town developed to its fullest saturation point.

After 10 months of heated controversy, the voters finally decided in October of 1963 to buy the property. A compromise had been worked out so that a portion of the acreage would be set aside for the proposed junior high school and other general town uses. A major factor influencing the positive vote on the land purchase issue was the almost certain availability of state and federal assistance under a new cost-sharing program. The acquisition price of \$124,000 for the park parcel was defrayed by the receipt of \$43,000 in state funding along with \$37,000 from the Federal Housing and Home Finance Agency. The town's financial burden was further lessened by a \$30,000 grant from the Hartford Foundation for Public Giving. Thus the final cost to the town was only \$14,000.

The grant of \$43,000 to Glastonbury from the state of Connecticut was the first ever given under the so-called "Open Space Act," Public Act 649 which was passed at the 1963 session of the state Legislature. The "Open Space Act" was designed to encourage the preservation of land for conservation and recreation purposes. It originally provided a total of \$2,750,000 in state assistance to municipalities for the purchase of "green acres." The acreage purchased under the program would be dedicated to out-

door recreation and/or conservation uses and be open to the general public.

TODAY, OVER 25 YEARS AND 400 PROJECTS later, a program that is essentially the same is still operating. Known as the State Outdoor Recreation Fund, it provides cost-sharing for land acquisition and also for construction or renovation of facilities for public park, recreation, or conservation purposes. If federal Land and Water Conservation Fund monies are available, the municipality may be reimbursed 75 percent of the project cost. When federal funds are not available, the municipality may receive a reimbursement of 40 percent from the state.

State Outdoor Recreation Fund project requests are solicited in early spring when a questionnaire is automatically sent to all Connecticut municipalities. Projects are ranked according to a point rating system to determine which projects will be funded. One of the categories on which a project is evaluated is its consistency with the goals of the Statewide Comprehensive Outdoor Recreation Plan (SCORP). Other considerations include public participation in the planning efforts, environmental concerns, history of grants received by the municipality, and availability of local funding. Special consideration is given to meeting the needs of elderly, handicapped, and minority populations.

After questionnaires have been reviewed and rated, municipalities with top-ranked projects are notified in midsummer to submit final application materials. Approval to begin the projects is usually given by late fall.

If you are in Glastonbury and happen to visit that first open space grant project (known today as "Williams Park"), you will find it highly utilized and in excellent condition. In addition to an extensive system of trails for hiking, nature study, and cross country skiing, the park contains a large picnic shelter, a restroom/kitchen facility, an ice skating pond, a children's playground, and a ballfield.

Over 25 years ago, proponents of the Williams property purchase emphasized that they were not trying to stop growth or prevent development. What they sought was to make sure that some part of the natural landscape was saved, preserving the quality of life as development proceeded. These individuals were certain that the residents of Glastonbury and their descendants would never regret the decision to purchase the park. They were right.

For further information on the State Outdoor Recreation Fund, please contact Judith Prill, DEP Land Acquisition and Management Unit, 165 Capitol Avenue, Hartford, CT 06106; or phone (203) 566-2904.

(The author wishes to express special thanks to Ed Richardson of Glastonbury for assistance with this article.)



The Jefferson salamander has long toes, a long snout, and blueish flecks on its sides. (Photo: Ellen Dawley)

Salamanders on the Move

by

Ellen Dawley

Visiting Assistant Professor
Bowdoin College

THE FEEL OF SPRING is in the air. It may be a week or so until the Vernal Equinox, but the ground is soggy with melting snow and ice on the ponds is breaking up. The air is heavy with moisture, both from the ground and from the threat of precipitation. This night, the first rainy night of the season, marks the beginning of a massive, silent migration — thousands of Jefferson's salamanders (*Ambystoma jeffersonianum*) and spotted salamanders (*A. maculatum*) will emerge from their underground retreats and move noiselessly along the forest floor, converging on the shallow ponds where they perform their mat-

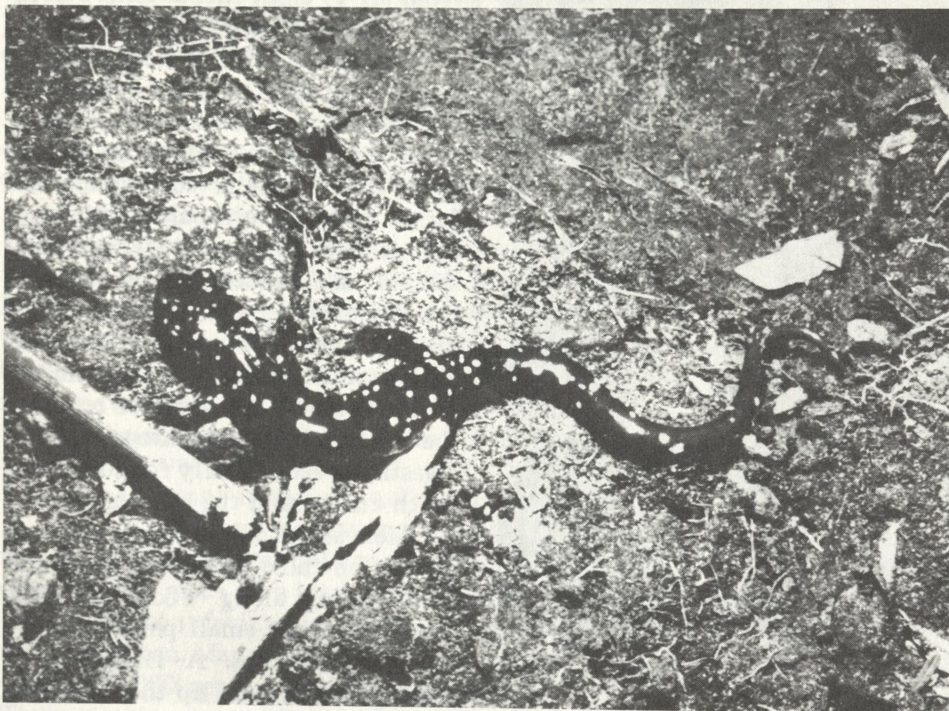
ing dances. Unlike frogs, who announce their mating dances through loud calls, these salamanders often go unnoticed, despite their great numbers. Yet, these nocturnal salamander migrations are a sure sign that winter has at last loosened its grip.

Both Jefferson's salamander and the spotted salamander are members of the mole salamander family (*Ambystomatidae*). Mole salamanders are so named because they spend most of their lives (as long as 30 years) in cracks and tunnels underground, or underneath logs and rocks, emerging for one or two weeks each spring to breed. Adults of both species range

from six to eight inches long. Jefferson's salamanders are smokey-black or brown, often with a scattering of small, faint blue spots along the sides. Spotted salamanders are a truer black, with prominent yellow or orange spots. Individuals of both species are fairly chunky, although Jefferson's salamanders are more slender than spotted salamanders. Males and females are nearly identical, but can be distinguished during the breeding season because males have distinctly swollen cloacal areas (cloaca refers to the common exit of the urogenital and digestive tracts, usually found just beneath and behind the hind legs).

Mole salamanders can be seen migrating on those first rainy nights in early spring along woodland roads bordered by the small ponds used by these salamanders. A flashlight or headlight will pick up these animals as they cross from one wooded side to the other to enter a pond, often using the same migration routes year after year. Routes to ponds that pass over well-traveled roads can be disastrous for the salamanders, and well-meaning human observers have attempted to reduce the number of flattened salamanders by putting up "Salamander X-ing" signs or, in one case in Massachusetts, constructing a salamander underpass.

THE CUES SALAMANDERS use to decide when to migrate are unknown, although they probably involve increased temperature and moisture reaching underground. Likewise, it is unknown how salamanders find breeding sites (permanent woodland ponds, slow streams, and temporary pools), although other species have been shown to use olfactory and magnetic cues. In areas with both species, Jefferson's salamanders begin migrating a few days before spotted salamanders. Males migrate first to breeding ponds and wait at obvious points of arrival for the females. Males generally outnumber females in the ponds because they remain for the entire breeding season, whereas females



The slimy salamander (Plethodon glutinosus) varies greatly in the number, size, and color of its spots. It is named for the large amount of slimy skin secretions which stick to your hands if you pick up this amphibian. (Photo: Les Merhoff)

arrive late and leave early (presumably staying only long enough to ensure fertilization and to lay their eggs) and may not breed every year. Not all ponds house these mating salamanders, but the ones that do seem to be used faithfully from one year to next, presumably by the same animals.

ONCE IN THE POND, the salamanders begin to mate. Like most salamander species, mole salamanders use an indirect form of internal fertilization. Males produce a structure called a spermatophore and deposit it on the bottom of the pond. A spermatophore is a packet of sperm (from the testis) perched on a stalk made by their cloacal glands. Males try to deposit spermatophores just in front of the female, and the female picks up some or all of the sperm with the lips of her cloaca. Courtship, which occurs in shallow water, starts after the male detects a female through her movements, and probably through olfac-

tion. He then rubs and nudges her with his snout, circling and passing underneath her body. The female shows her interest by rubbing and nudging the male in return; for the spotted salamander, this is enough of a cue of the female's receptivity that the male starts depositing spermatophores, usually reestablishing contact with the female between depositions.

Because males outnumber females in the breeding pond, several males may simultaneously court one female or group of females, and males use different tactics in an attempt to fertilize as many females as possible. In the spotted salamander, competition between males apparently places a premium on rapid deposition of many spermatophores, up to 40 per courtship. Furthermore, each male tries to deposit his spermatophores on top of those of other males to better the chances that a female will pick up his sperm. Courtship in these crowded conditions, however, lessens the chance that a female will find and

pick up a particular male's sperm. Not all salamanders breed under such frenzied conditions, and males of many species employ tactics to increase the probability of fertilizing a particular female. Jefferson's salamanders show one such strategy: After rubbing and nudging a female, the male moves above the female and clasps her below her shoulders with his forelimbs, swimming away with her if another male tries to interfere. Then, before depositing his spermatophore, the male moves in front of the female so that her snout nudges his cloacal region. This places the male directly in front of the female as he deposits his spermatophore, and the female may receive cloacal pheromones that have a persuasive influence on her (in the past referred to as 'hedonic' secretions). Because of this, courtship in Jefferson's salamander tends to be more likely to fertilize a female. Spermatophores are easily seen at the bottom of shallow water; they are about one-quarter to one-half inch tall and made from a translucent jelly base capped by a white sperm mass. The spermatophores of Jefferson's salamander are deposited singly and are widely scattered. Those of the spotted salamander lie in clumps of a dozen to a hundred or more. Observers unfamiliar with salamander lore might assume that these spermatophores are eggs.

A FEMALE may pick up sperm from more than one spermatophore, but usually she quickly loses interest in further courting. In species with longer breeding seasons, females remain sexually receptive for several months, usually storing sperm from several spermatophores. Females store the sperm in modified cloacal gland (a spermatheca) until they are ready to deposit eggs. At the time of oviposition, spermatozoa are expelled from the spermatheca and fertilize the eggs as they enter the cloaca. Female mole salamanders deposit eggs within two to three hours after courtship, but

in some other salamanders deposition may occur two to three months after courtship. The eggs are laid in clumps of up to 100, wrapped around submerged sticks or other vegetation. After developing in the eggs for 30-40 days, gilled larvae emerge to feed upon virtually any moving thing small enough to fit in their mouths. After feeding and growing for two to four months, the gilled larvae metamorphose, absorbing their gills and respiring with their lungs and skin. The tiny, adult-like salamanders move into the woods and underground. After a year or two of feeding and growing on land, the generation of salamanders returns to the ponds to mate. This is a typical "amphibious" life-cycle; the young begin life in the water, are terrestrial as adults, and then return to the water to breed and lay eggs. Not all salamanders follow this amphibious life-cycle, however. Some species remain in water their entire lives, while other species are totally terrestrial, laying eggs on land that hatch into miniature adults. In the latter group, the gilled larval state is restricted to the egg.

After a few weeks, the last of the

female mole salamanders leave their ponds to return to their underground retreats, and the males soon follow. The migration back to the forests is not so dramatic because it occurs over many nights, compared to the pondward migration, which is compressed into only a few nights. During the rest of the year an occasional mole salamander can still be found by rolling over logs, but other species of terrestrial salamanders, like the slender red-backed salamander, predominate. Yet the legacy of the mole salamanders lingers in the ponds for a while; first as clumps of translucent eggs, each egg with a twitching black center, and later as swarms of free-swimming larvae, voraciously eating their way to adulthood. ■

This article was contributed by The Connecticut State Museum of Natural History and The University of Connecticut in Storrs, which exhibits mounted birds of Connecticut, the largest mounted white shark on display in the eastern United States, "Videoplace" interactive video, Indian artifacts, and offers programs

for teachers, children, and adults. For information, contact the Museum, UConn Box U-23, Storrs, CT 06269; phone (203) 486-4460.

Salamander Update

SALAMANDERS generally appear in the spring when they leave their woodland haunts and migrate toward bodies of water to mate. The rest of the year they remain under logs and rotten wood, mostly in woodlands. One species, the water newt, is found in water.

While some species are more abundant than others, in Connecticut all salamanders need to be protected. Species of special concern are the slimy salamander (*Plethodon glutinosus*) and the spring salamander (*Gyrinophilus*). The slimy salamander is found in western Connecticut in very moist woods under logs and litter. The spring salamander is found in northwestern Connecticut in cold, swift streams and clear springs. It is reddish with black spots.

"If you find a salamander, the best thing to do is to leave it alone," says State Biologist Leslie Mehrhoff of DEP. "They don't bite and are not poisonous to humans. To help preserve these amphibians, please don't touch them. Let them go about their business."

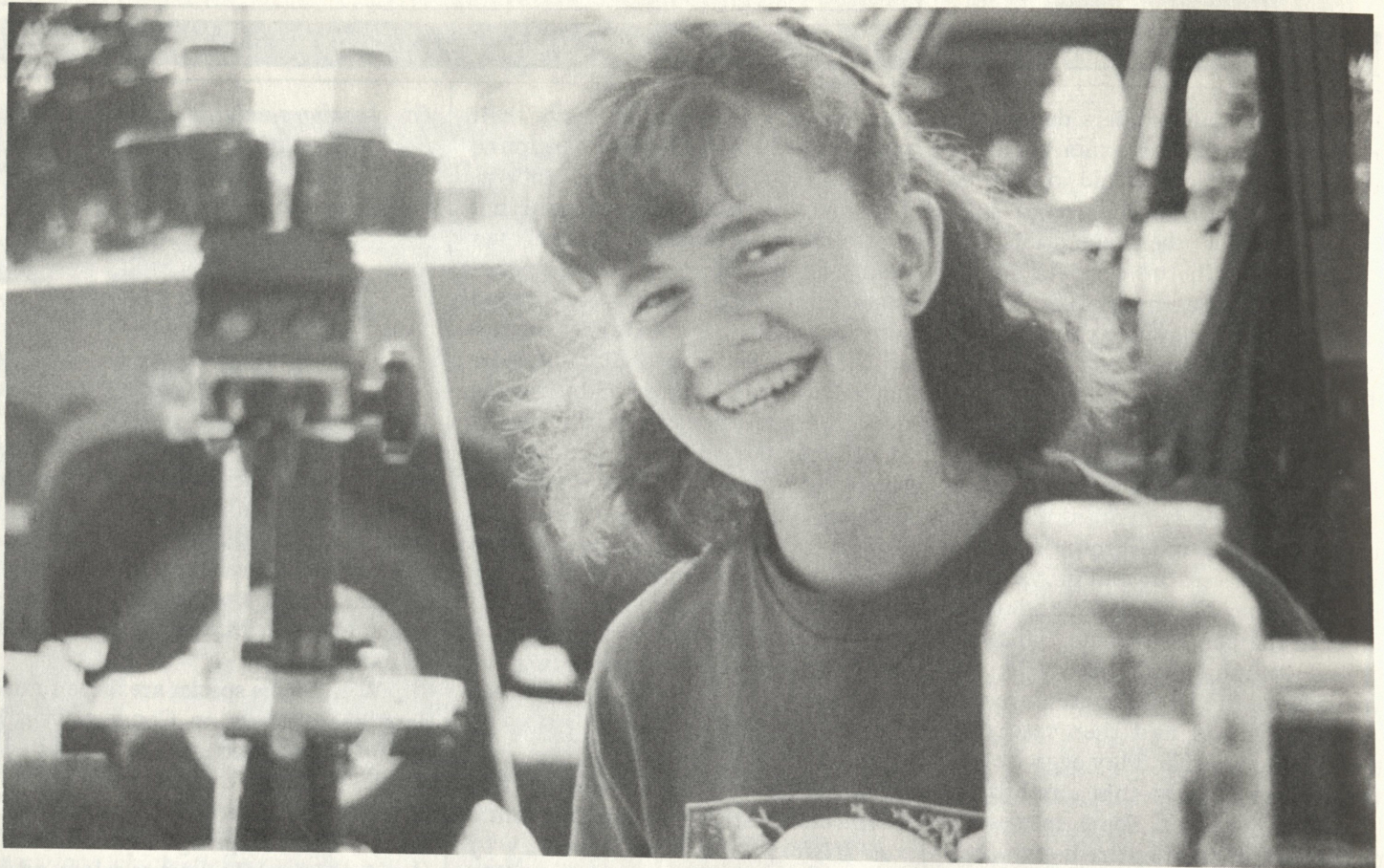
Occasionally a salamander may wander into a damp basement. "Please don't kill it," said Mehrhoff. "Just gently pick it up, take it outside, and place it under some damp leaves."

In the spring of 1989, a population survey of Connecticut salamanders will be taken by the Geological and Natural History Survey of DEP.

Remember that certain salamanders are protected against collecting in Connecticut. For further information, please contact the DEP's Bureau of Wildlife, 165 Capitol Avenue, Room 254, Hartford 06106. ■



The red-spotted newt or red eft (Notophthalmus viridescens) is Connecticut's most brilliantly colored salamander. The aquatic adults are yellow brown to dark greenish brown. (Photo: Les Merhoff)



Rachel Bynum of East Hampton was one of Connecticut's top students chosen to participate in the SEARCH project at Hammonasset State Park this summer. (Photos: R. Paier)

Project SEARCH

Drawing on our most precious natural resource.

by
Alberto Mimo
 Environmental Educator

ONE OF THE MOST POPULAR PROGRAMS offered by the DEP's Office of Information and Education is Project SEARCH. While this is largely an innovative and experimental program, the idea behind it is not really new at all. That idea is that for real learning to take place, it is not absolutely necessary for the student to be confined within four walls, memorizing page after page of dry unrelated facts. Project SEARCH brings the student out of the classroom and into the real world of sunshine and fresh air and trees and animals. In Project SEARCH, the student touches directly the point at which theory and reality meet.

For many, environmental education means "tree hugging," or looking wistfully at beautiful flowers, or gazing at bluebirds soaring toward the clouds. For others, it means learning lots and lots of facts, like "A whale is not a fish," and "Squirrels collect acorns." Now, none of that is bad; it just isn't complete. It falls short of a clear and well-defined purpose. It doesn't lead to action.

Human nature, as we know, is complex. This complexity reaches an even higher level when we deal with the human teenager. It is not always easy for an adult to establish a clear and precise communication with teenagers. We good-intentioned adults want to share our

hard-won knowledge and experience with teenagers, but somehow we can't always make it happen. We want to work with them, as a team, toward positive goals and solutions, but we find that's easier said than done. And beyond that, we all, adult and teenager, would like to be able to do what we do with enjoyment and spontaneity and just plain fun. We haven't figured out how to love what we are doing with our time and our lives.

In Project SEARCH, students seek real environmental solutions to real environmental problems, taking into consideration real facts. Project SEARCH is reality but, even more importantly, Project SEARCH is action. In Project SEARCH, things happen. Project SEARCH is people working together. Project SEARCH is hope, trust, and progress.

The process of Project SEARCH is simple. The students are assigned a clear and specific research project. They are given the tools and means to complete that project. They are given all the technical and moral support they need. And then the students do the rest. That's it.

Project SEARCH has grown considerably since its beginning three years ago. SEARCH projects are becoming more demanding and complex. And we, both adults and teenagers, are always learning new things.

One of the obstacles Project SEARCH is still struggling with is that many environmental professionals are not confident of data obtained by students. It is the position of all of us involved with Project SEARCH that it is a big mistake to underestimate the abilities of teenagers. It is our position that teenagers are able to make very real and significant contributions to our world, not in some nebulous future time, but right now. In Project SEARCH, teenagers are given responsibilities right now; they are part of the human team right now. We all share the same environment. Teenagers and adults live in the same world, we breathe the same air, we drink the same water. And so we in Project SEARCH think that teenagers can and should have something to say about what is happening in this world of ours. It is their right, just as it is our right to expect good work from them. Let's work together.

And then we asked the kids.

Marc Holden
Age: 15
Foran High School
Milford

In the SEARCH Program I learned a lot about the environment, the creatures in it, and how they need protection from man and his pets. If we are not careful, we will kill off our own planet. It started me thinking a lot more about ecology, more than I ever did before. Now I realize how much trouble we're in between the ozone, acid rain, the oceans, and air pollution.

I also learned a lot about being with people, like not to be so shy, and not to be afraid to express your opinion because who knows? One quick idea might be the solution to save the world someday. I learned about responsibility. Because if you're not responsible, you're not going to get anywhere in this world. And eventually responsibility turns into organization. If you're not responsible, you will not be able to do anything because you could never find anything, and if it was important information and you could not find it, it could cost you your job eventually.

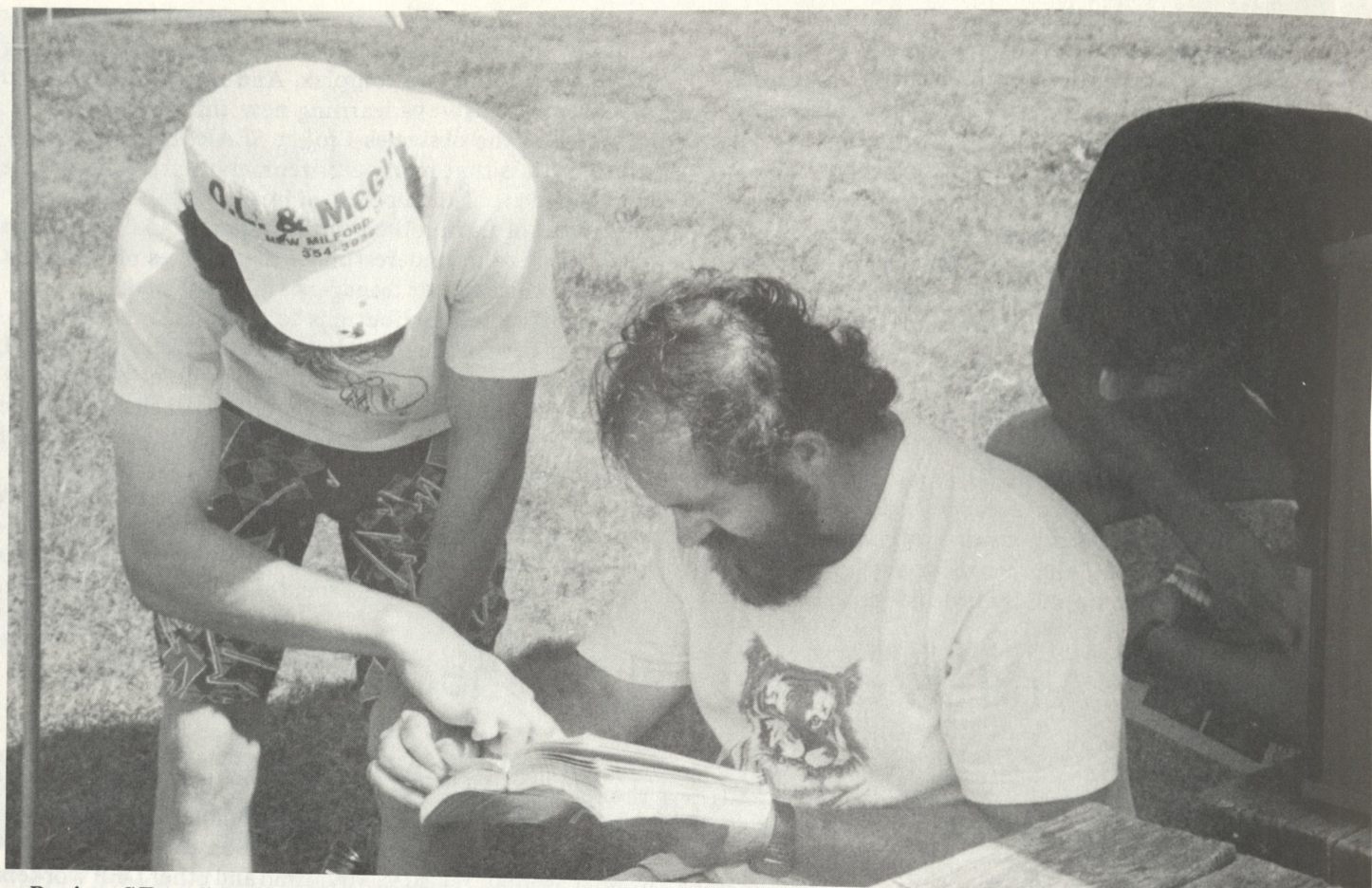
I would like to be a scientist some day, and the SEARCH program encouraged me to continue this dream. I learned many things at SEARCH, but I believe the most important thing was that I can do something to help improve the environment now, not tomorrow. I had always believed that adults never acknowledged kids as people who cared for and could help the environ-

ment. I found out at SEARCH, from the work we did, that people do want to hear what we have to say and want us to take action on environmental issues. Mr. Mimo and other DEP workers kept in touch with us even after the SEARCH program had ended, and encouraged many of us to set up clubs that will work to solve local environmental problems. I have now set up a



One of the goals of Project SEARCH is for kids to take responsibility for themselves. Shown here, a detail of kitchen police prepares the noon meal.

Caroline Finch
Age: 15
Greenwich High School



Project SEARCH Coordinator Alberto Mimo gives a little help to a student. Finally, however, the SEARCH kids are on their own.

new club at our high school to conduct research on environmental problems.

I learned a lot at SEARCH. I learned not only about writing scientific research papers and how to go about gathering data for them, but also that we teenagers can influence people and do something to change the world that someday we will have to rule. The SEARCH experience is something that I will always remember, and it did not end on that summer day in August. It is still going on, at my school, and at others.

Isacc Graf
Age: 15
Bloomfield High School

Through the DEP summer program, I was able to actively participate in a current scientific investigation. The specific setting of the salt marsh increased my awareness of the plight of that particular ecosystem, which I feel helps me to appreciate the environ-

ment as a whole. In addition to scientific knowledge which I gained, the experience of working and living with a group of other students of my age was valuable. We learned to work on the project as a team and then write a report on our findings together. There was plenty of time to rest and have fun and Mr. Mimo did a wonderful job in keeping everybody happy. I had a very enjoyable week at Hammonasset State Park and it was a great educational experience.

Rick Hart
Age: 16
Hamden High School

This past summer I was lucky enough to be one of the high school students selected for the Summer Search Program.

The study this year involved the feeding habits of the piping plover, which was quite interesting and educational. I learned many things about

the area at Hammonasset State Park and also the DEP and its many functions. I also learned how important it is to be accurate and how team-work makes the job easier, more thorough and more exciting, especially when you put all the information together and really have something to work with. In the next few years, environmental education will be the key to our survival. Hopefully we can use what we learned to make the world safe again.

Christopher Lang
Age: 17
Trumbull High School

Today I received my developed pictures from my experience with project SEARCH this past summer. Oh boy, what memories! As any of the participants can testify, the group spirit was very high. The fun and friendships of the week were worth every bit of work put in to the project. The friendship was, however, only a part of

what I gained from Project Search. By working with a professional scientist, Alberto Mimo, we were able to get a first glimpse at professional methods in research, field work, experimentation, and conclusion. Unfortunately, this kind of experience in learning, not just about science, but about a career is not available in my high school, I am very thankful to be able to participate in project SEARCH and hope that many others will seize the opportunity.

Tracy Lavigne

Age: 18

Enrico Fermi High School (now attending Gordon College)

Through the SEARCH program, I learned how to work with a group of people whom I never worked with before. There was lots of responsibility handed to us and we managed just fine. Also, through this program, I learned how to appreciate the environment I live in and also how to preserve it. One way in which I learned how to preserve the environment was to help endangered species by learning about them and their feeding habits. By doing this, our group could understand and help the endangered species.

Also through this program, I learned how to conduct thorough research—from observing to microscopy to writing it all down. This program has taught me more than I ever imagined. It's an experience I will never forget and it will help me in my studies at Manomet Bird Observatory as well as in my major. Thank you.

Amy Gosselin

Age 16

Canton High School

I am firmly convinced that SEARCH was the best part of my summer. I never thought I could learn so much in one week! It seemed as if the more I learned about other people, the more knowledgeable I became about myself. For six days I spent every waking (and sleeping!) minute surrounded by 15 other kids I had never met before in my life. What an experience! All of the

chores were divided equally amongst ourselves, and we all felt a sense of responsibility toward the group. It felt as if we were one giant family, and that was a terrific feeling. Everyone was accepted for who they were as people, not just their face value. We quickly realized that we couldn't succeed as individuals alone, but as a team. We had all seen each other at both our best and worst, helping us accept each other and maintaining strong friendships.

On a personal note, I learned a great deal about myself. Accepting others, keeping an open mind, taking responsibility, and becoming task-oriented were valuable lessons for me during the week. Thank you for allowing me to participate in SEARCH. I hope I might be able to do it again next summer!

Tiffany Fortier

Age: 16

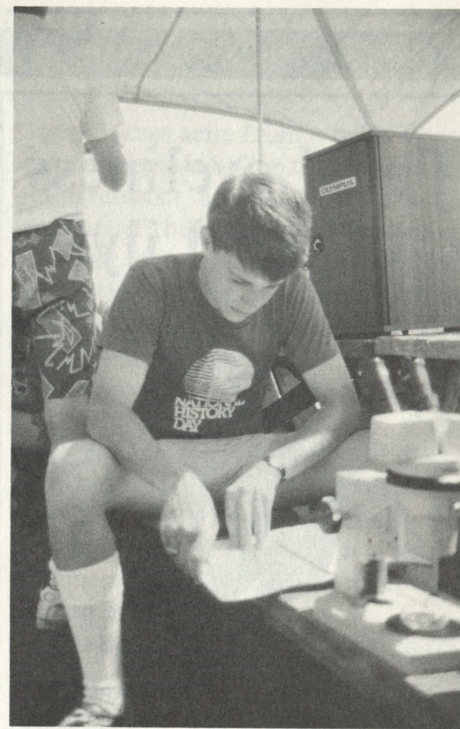
Glastonbury High School

Through attending the summer SEARCH program, I feel I learned many important values and also gained a lot of important knowledge concerning the environment and those organisms inhabiting it.

First of all, SEARCH taught me the value of being responsible and organized. During my week stay at Hammonasset Beach studying the feeding habits of the piping plover, an endangered bird, we were required to make many decisions on our own, taking into consideration various conditions before taking action. We had to decide what experimental methods we would use to go about studying the birds' feeding habits, what tools we would need in carrying out the experiment, how the data would be recorded, how the paper would be written, etc.

Through having to make all these decisions, one also needed to be prompt and organized if things were to be done properly and efficiently. Different levels of organizational skills were required too; one needed to know how to organize a research group as well as how to organize a research paper.

Consequently, the program also enriched your ability to work cre-



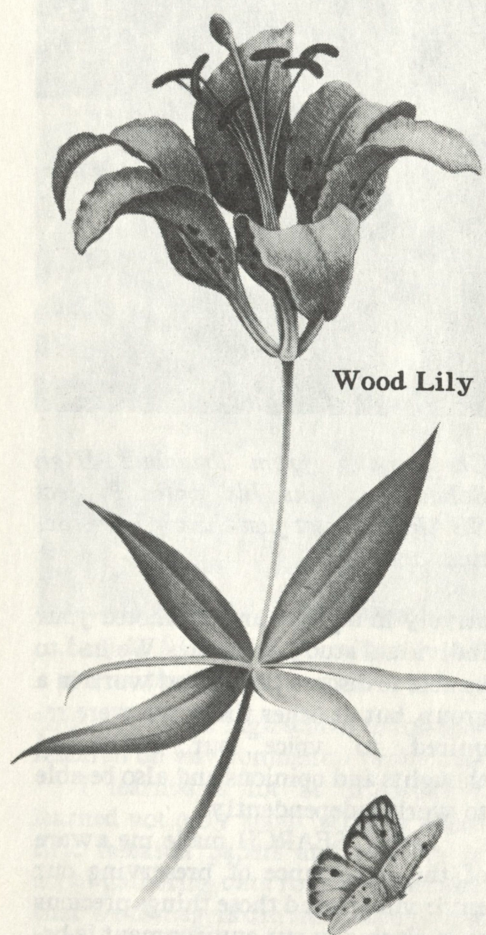
Chris Lang from Trumbull High School rechecks his data. Project SEARCH is not just theory, but practical action.

atively in a group and promoted your individual study skills too. We had to be able to discuss things and work in a group, but at other times we were required to voice our individual thoughts and opinions and also be able to work independently.

Lastly, SEARCH made me aware of the importance of preserving our environment and those things precious to it. Each day our environment is being destroyed by careless people in the form of pollution or litter. It is by these factors that an increased number of predators are being drawn closer to the habitats of these birds and other more feeble animals. The higher predator count is causing the number of birds and other animals to dwindle near the point of endangerment or even extinction. They need our help. Programs such as SEARCH create this awareness of the problem at hand.

For further information on Project SEARCH, please write SEARCH, DEP Information and Education Unit, 165 Capitol Avenue, Hartford 06106; or phone (203) 566-8108. ■

The Loveliness of the Lily



by
Gale W. Carter
Illustrations from
U.S. Department of Agriculture

WHEN WE THINK OF A LILY, usually we are thinking of one of the garden lilies, or the beautiful white lilies on display at Easter time. These, however, represent only one division of this large showy family, *Liliaceae*.

Many of the choicest bulbs that we plant in our gardens are members of this group. These include the tulips,

lilies, hyacinths, and squills.

This family also includes some of our most attractive spring wildflowers, such as the trilliums, the bell-worts, the Solomon seals, and the trout lilies.

While the above members of the lily family do not have woody tissue, there are a few exceptions which do, such as the catbriers (*Smilax*) and the Joshua tree (*yucca*) of the western desert.

Here are some of the general characteristics of the lily family:

- A typical flower has three sepals and three petals that are the same color (sometimes referred to as tepals).
- Six stamens are usually present.
- There is a single pistil with three chambers in the ovary.
- Leaves are usually parallel-veined. The trillium is an exception, with its netted veins.
- The fruit is in the form of a capsule but occasionally a berry.
- The ovary is usually superior (above the other flower parts).
- The underground parts are adapted for food storage, in the form of a bulb, a corm, or a rhizome.

Let's look at some of the common members of the lily family that grow wild in the East, arranged in the order in which they will flower.

INDIAN CUCUMBER ROOT (*Medeola virginiana*) is a rather unusual looking spring flower found in moist woodlands. It has a slender stem with two whorls of entire leaves with the upper leaves fewer in number and smaller. The flower is small with recurved green-yellow tepals and six reddish stamens. There is a single pistil with three long reflexed reddish thread-like stigmas. Blossoming time is May through June. The fruit is a purplish-blue berry.

The plant was given its genus name for the sorceress Medea of ancient Greece, because of the belief that it has medicinal value.

Its common name refers to its root

which tastes and smells like a cucumber. The American Indians were believed to have used it for soups and stews.

THE FLOWER of Solomon's seal (*Polygonatum pubescens*) graces moist woodland areas as early as May, but some individual plants may be flowering as late as the middle of June.

Its beauty lies in the long arching stem with its many yellowish-green, bell-like flowers that dangle downward from the axils of numerous, alternately-arranged ovate leaves. The flowers will later be replaced by dark blue berries.

Its genus name *Polygonatum* is derived from two Greek words: *poly*, "many," and *gonus*, "knee." This refers to its underground stem, or rhizome, which is divided into many joints.

The common name, Solomon's seal, is believed to come from the resemblance of the circular growth scars found on the rhizome to the seal of King Solomon. Another view associates the name with the alleged use of the crushed rhizome for sealing open wounds and knitting broken bones.

The species name *pubescens* refers to its hairy leaves. The two-flowered Solomon's seal, *Polygonatum biflorum*, is nearly identical to *Polygonatum pubescens*, except that it is hairless.

At present, Solomon's seal is sometimes eaten as a wild edible. The young shoots are eaten like asparagus and the rhizomes are sometimes added to stews. The harvesting of these plants should be limited to areas where the plant is very abundant.

FALSE SOLOMON'S SEAL, or false spiknard (*Smilacina racemosa*), sometimes called Solomon's plume, is found growing in the same moist woodland habitat where Solomon's seal is found. The two species, for some reason, often grow side by side. They resemble each other in a general way, but false Solomon's

seal has a stem that is more zig-zag and its white flower cluster is at the tip of the leafy stem instead of being pendant, as in Solomon's seal. They both have fleshy rhizomes.

The flower blooms from May into July while its fruit is a pleasing translucent red berry.

The genus name *Smilacina* is misleading, suggesting a similiar appearance to the catbriers (*Smilax*), another member of the lily family, but there is little likeness.

Its species name *racemosa* is a reference to the arrangement of the flower, which is a raceme.

False Solomon's seal has uses as a wild edible that are similar to those of Solomon's seal. The same precautions should be followed in not using it unless it is very abundant.

THE TURK'S CAP LILY (*Lilium superbum*) is one of our most spectacular wildflowers. It is found only occasionally in wet meadows and woods. Growing to a height of up to eight feet, it may have as many as 40 blossoms. When this happens, it gives the appearance of a beautiful candelabra. It blossoms in July and August.

Each of its colorful nodding orange tepals is dramatically recurved to resemble a cap or turban worn by a Turk. The flower is generously speckled with purple spots. In the center of the flower is a green star, a feature that is not present in any other of our native field lilies. Its six stamens have long anthers that noticeably protrude, as does its three-parted stigma. The fruit is a three-parted capsule.

The leaves of the Turk's cap are for the most part whorled. Only a few of the upper leaves are alternate. Its underground stem is a bulb.

The Canada lily (*Lilium canadense*) also has nodding flowers, but it is not as tall and its tepals are not recurved as much.

Another native lily, the wood lily (*Lilium philadelphicum*), has orange-red flowers that point straight upward. Its tepals are tapered to slender

stalks, which produces a cup-like base with holes that allow water to escape when it rains.

THERE ARE APPROXIMATELY a dozen species of *Smilax* found growing in the Northeast. This is the only group in the lily family, other than yucca, that has woody tissue. The common greenbrier (*Smilax rotundifolia*) is one of the common species. It is usually found in rich lowlands or along the border of woodlands. The plant is a tough woody vine with scattered sharp incurved prickles. It arises from a long slender rhizome and is equipped with tendrils for climbing, typically appearing in jungle-like form.

The flowers of greenbrier are small and greenish to bronze, appearing in umbels at the axil of its shiny heartshaped leaves. Male flowers are on one plant and female flowers on another. The blooming period is May and June. Its fruit is a blue berry.

The carrion flower (*Smilax herbacea*) is a similar species but the flower is much more conspicuous and has a very foul odor. Thoreau compared its odor to that of "a dead rat in the wall."

Greenbrier is one of our wild edibles. A flour can be made from its rhizome and the young shoots can be used in salads or cooked as a vegetable.

Wildlife also make use of greenbrier. Rabbits use it for cover and the berries are food for the ruffed grouse, mockingbird and catbird.

LEES (*Allium tricoccum*) represent a group in the lily family that has only two basal leaves. This characteristic is also present in the trout lilies (*Erythrorium*) and the wood-lilies (*Clintonia*). All other groups that have previously been discussed have stems with leaves that are some distance from the ground.

Look for leeks in moist woodlands during the early spring months, often growing in colonies. Their two wide

fleshy leaves arise from a bulb. These leaves disappear before the flowers begin to blossom in midsummer. The appearance of their leaves and the timing of their flowers distinguish them from other species of *Allium* such as wild garlic (*Allium canadense*) and field garlic (*Allium vineale*). These species have narrow leaves which are generally present when the plant flowers.

The white flower of the leek appears in a cluster, an umbel, at the end of a single stalk. The fruit is a three-chambered capsule, each chamber containing one black seed.

Leeks have long been cherished for their mythical medicinal powers and for their value as food. It was once believed that they were beneficial in treating ailments ranging from gunshot wounds to scorpion bites, or even freckles.

Folks in the Southern Appalachians still have their Annual Ramp Festival. The bulbs of ramps are used in soups and stews and the fresh leaves are cut up for use in salads. ■



Turk's Cap
Lily

Dinosaur State Park

The following events will be presented by the Friends of Dinosaur Park Association, Inc.

Lecture Title: "Watersheds and Wetlands in Connecticut."

Date and Time: Tuesday, March 7, 1989. **Lecturer:** Peter LeTourneau, Environmental Geologist.

Description: Mr. LeTourneau will discuss the hydrologic cycle, follow a raindrop from the watersheds (drainage areas) of Connecticut to Long Island Sound, and talk about the uses and abuses of water management. In addition, the various types of inland wetlands and wetland functions and values, particularly as they apply to land use planning and development, will be discussed. The lecture will be particularly helpful to citizens interested in resource protection issues. A question and answer period and refreshments will follow.

Donation: \$2.50. Tickets available at the door, or call Dinosaur State Park at 529-8423.

Place: Dinosaur State Park, West Street, Rocky Hill, CT 06070. Exit 23 off I-91, (203) 529-8423.

Event: "Dinomania — Dinosaur Fair and Collectibles Show"

Date: Saturday, March 11, 1989

Time: 10:00 a.m. to 4:00 p.m.

Description: Anything goes! Exhibits, videos, door prizes, balloons, activities, refreshments! For children of all ages. Rain or shine. Exhibitors are welcome to show, swap, or sell their dinosaur-related collections. If interested in exhibiting at Dinomania, please call Richard Krueger at (203) 529-8423.

Fee: Free with Exhibit Center Admission

Exhibit Center Admission: \$1.00 for adults, \$.50 for children 6-17, children five and younger are free.

Place: Dinosaur State Park, West Street, Rocky Hill, CT 06067, (203)

529-8423. Exit 23 off I-91.

For further information, please call Richard Krueger at (203) 529-8423. ■



Spring Seedling Sale

Brochures are now available for the Hartford County Soil and Water Conservation District's annual spring seedling sale.

The District's sale offerings include a variety of tree, shrub, and ground cover seedlings that are suitable for conservation plantings. These include planting for reforestation, wildlife habitats, windbreaks, erosion control, and as Christmas trees. Potted blueberry seedlings will be offered again. This was an extremely popular item last year. Wildflower seeds and fertilizer tablets will also be on sale.

All seedlings are bare-root stock. The smallest order possible for any one species is 25, with the exception of the blueberries which are being sold in lots of six. All orders will be honored on a first come, first served basis. Pick-up for the sale is tentatively set for mid-April.

The Hartford County Soil and Water Conservation District is a non-profit agency that provides technical assistance to farmers, private landowners, and local governments in cooperation with the U.S. Department of Agriculture Soil Conservation Service.

Seedling brochures may be obtained by either writing or calling the Hartford County Soil and Water Conservation District, 1101 Kennedy Road, Room 105B, Windsor, CT 06095. Phone 688-7725. ■

AIAI Events

The American Indian Archaeological Institute in Washington, Connecticut, announces the following events:

The film *Man of Aran* will be shown Saturday through Monday, March 11-13, 1989, at 2:30 p.m. *Man of Aran* is the famous 77-minute black-and-white classic that was filmed on the barren island of Aran, off the western coast of Ireland. This early documentary by Robert Flaherty emphasizes specific reconstructed aspects of the islanders' culture as they struggle for survival by hunting the basking shark and building soil by collecting seaweed.

The film *How The Myth Was Made* will be shown Saturday through Monday, March 18-20, 1989, at 2:30. *How The Myth Was Made* is a 60-minute color film about the production techniques of the famous classic, *Man of Aran*. The label of "documentary" for Robert Flaherty's classic is questioned because long-discontinued activities were reenacted specifically for its filming. Flaherty's purpose in *Man of Aran* was to create an enduring tribute to the islanders, so he stressed a lyrical emphasis on the past and ignored contemporary problems.

The film *Jerusalem* will be shown Saturday, March 25 and Monday, March 27, 1989. The Institute will be closed Sunday, March 26 in observance of Easter. *Jerusalem*, a 21-minute color film, presents the difficulties of retaining the historical character of an ancient city while it is suffused with modern activities. The problems are analyzed by renowned architect Moshe Safdie and by mem-

bers of the Society for the Beautification of Jerusalem.

Admission to the AIAI is by membership or a donation of \$2 for adults and \$1 for children ages 6-18. The museum is open Monday through Saturday from 10 a.m. to 5 p.m. and Sunday from noon to 5 p.m. AIAI is accessible to the handicapped. Senior citizens are invited to the Small World Film Festival each Monday as AIAI's guests. For further information, please phone (203) 868-0518. ■

Around the State

March 11-12, 1989. Wilton: Wilton Historical Society's 22nd Annual Antiques Show, Wilton High School Field House, Rte. 7. High quality antiques of the 18th and 19th centuries. Sat. 10:00 a.m.-5:00 p.m.; Sun. 11:00 a.m.-5:00 p.m. Admission: \$5.00. Attendance: 6,000. Contact: Marilyn Gould, Director, 249 Danbury Road, Wilton 06897. (203) 762-3525 or (203) 762-7257.

March 12, 1989. Norwich: Second Annual Norwich Spring Crafters Festival, Sheraton-Norwich. Over 50 craft exhibitors will participate. 9:00 a.m.-4:00 p.m. Admission: \$.50, children under 12 free. Benefits the Downtown Development Program. Contact: (203) 886-2800.

March 12, 1989. Stamford: 3rd Annual Greenhouse Tour. Guided tour of the flowering bulbs and pot plants of the Bartlett Arboretum greenhouse. Free. Attendance: 40. 1:00 p.m.-3:00 p.m. Contact: Bartlett Arboretum, 151 Brookdale Road, Stamford 06903. (203) 322-6971.

March 12, 1989. New Preston: Maple Sugaring Festival, The Inn on Lake Waramaug. A New England tradition. Free admission. Contact: The Inn on Lake Waramaug, Kevin Kirshner, New Preston 06777. (203) 868-0563.

March 18-19, 1989. Avon: Annual American Country Antiques Show,

Avon High School, 510 W. Avon Road. Sponsored by Avon Historical Society. Sat. 10:00 a.m.-5:00 p.m.; Sun. Noon-5:00 p.m. Contact: Mary Harrop. (203) 678-1538.

March 31-April 2, 1989. New Haven: 52nd Annual Spring New Haven Antiques Show, New Haven Coliseum, 275 South Orange Street. A \$15-million display of rare antiques, collectibles and decorative accessories by 261 exhibiting dealers from 25 states and from England and France in New England's oldest and largest antiques show. Fri. and Sat. Noon to 10:00 p.m.; Sun. Noon to 6:00 p.m. Admission: \$4.00, \$3.50 with discount coupon. Attendance: 18,000. Contact: Milton Cottler, 46 Kohary Drive, New Haven 06515. (203) 387-7006. ■

A Passing

When Genevieve Harlow Goodwin came to Hartford some four decades ago, she brought with her an interest in conservation. She became a member of the Hartford Garden Club and was also active in the philanthropic interests of her husband, James L. Goodwin. One of these was the Connecticut Forest and Park Association, Inc., a statewide conservation organization involved in the establishment of state parks and forests and in protecting forests and other natural resources. Mr. Goodwin had a long-standing interest in the Association, having been a member, director, officer, and president of the organization. Mr. and Mrs. Goodwin maintained close ties with members of the board, and they traditionally hosted at least one of the meetings of the board of directors at their Woodside Circle home each year. On several occasions the board of the Association met with members of the former State Park and Forest Commission at Woodside Circle to discuss matters of mutual interest and concern relating to state park and forest acquisition and policy.

Following Mr. Goodwin's death early in 1967, Mrs. Goodwin continued his interest in the Association and its activities relating to parks and

forests, the James L. Goodwin Conservation Center, and other activities in conservation. She continued to attend various meetings of the Association, participated in programs, regularly visited the James L. Goodwin Forest Conservation Center in Hampton, and hiked portions of the Blue-Blazed Hiking Trail System.

The dedication of Mr. Goodwin's Great Pond Forest in Simsbury as Great Pond State Forest was especially significant for her as she felt Great Pond Forest embodied the silvicultural practices which Mr. Goodwin had endorsed and implemented during his lifetime. The trails in Great Pond had also provided much personal pleasure so that her active participation in the dedication ceremonies reflected the interest and affection for this area of both, Mr. and Mrs. Goodwin.

Until her passing on January 17, 1989, Mrs. Goodwin retained her interest in the Association and was always eager to learn about its progress in all areas. She was one of the most enthusiastic supporters of the organization's campaign to construct its own facility on property which was given to the Association by John R. Camp of Middletown, and to expand its staff so that the citizens of Connecticut would be better served. The facility was dedicated as the James L. Goodwin Forest and Park Center on June 9, 1986. ■

Events at Goodwin Center

The following slide/lecture programs, sponsored by the Connecticut Forest and Park Association, will be presented at the James L. Goodwin Forest and Park Center, Route 66, Middlefield:

March 16, Thursday, 7:30 p.m. *To Save A River.* Mark McEathron of The Nature Conservancy will introduce us to rare and endangered animals, birds and plants, and pristine natural areas along the Connecticut River. The pro-

gram follows the ever-changing natural beauty of New England's longest watercourse from its source in a few lonely, picturesque ponds near the Candian border until it broadens into a majestic one-mile wide estuary to meet Long Island Sound.

March 30, Thursday, 7:30 p.m.
Urban Forestry. Jeffrey Campbell of the Cooperative Extension Service will give a slide presentation on the benefits of urban and community forest management in Connecticut. Did you know that a mature shade tree in the summer transpires up to 100 gallons of water a day? This is equivalent to five large air conditioners operating 20 hours a day with resulting temperature decreases of five to 12 degrees Fahrenheit. Learn how, when properly managed, urban forests can provide a wide range of aesthetic, functional and economic benefits to society.

April 13, Thursday, 7:30 p.m.
Costa Rican Adventure. Clyde Brooks and Dana Waring will describe their recent visit to the tropical forests of Costa Rica. Six tropical forests were visited: three rain forests, two cloud forests, and a dry tropical forest. The speakers, both active members of CFPA, will discuss their experience of the biological diversity and scenic beauty of this tiny country.

For further information, please phone 346-2372. ■

Fuelwood Permits

State Forester Peter M. Babcock announced that applications for the 1989 State Fuelwood Program are now available.

"As in past years, a lottery system will be used to allocate permits for two-cord and five-cord cutting areas," Babcock said. "The total number of permits is similar to past years, with demand expected to be greatest in the southcentral and southwestern parts of the state. For the year beginning July 1, 1989, 863 two-cord permits and 499 five-cord permits will be

available state-wide. Application information includes a map showing the management areas and the number of permits to be issued by area.

"Although the over-all supply readily accessible to the public is smaller each year, nearly 240,000 cords of wood have been sold from state lands during the past decade, with areas nearest population centers receiving the greatest pressure," Babcock noted.

For administrative purposes, state lands are divided into 17 management units. A lottery applicant may indicate a first and second choice of management unit, and must choose either a two-cord or five-cord category. Two-cord lots are close to roads passable by pickup truck. Five-cord sites are located some distance from a road and will usually require a tractor or four-wheel drive pickup.

Lottery applications and instructions are available in the State Office Building, 165 Capitol Avenue, in Hartford, both at the Bureau of Forestry, Room 260, and the Office of Information and Education, Room 112. Forms are also available at major DEP field facilities and at Cooperative Extension Service offices. Cards must be filled out completely and returned to: Connecticut Bureau of Forestry, 165 Capitol Avenue, Hartford, CT 06106, no later than April 15, 1989.

"It will take about six weeks to enter all the application data," said Babcock, "but all applicants will be notified by mail whether their names were selected or not. Mailing of actual permits will begin in early June."

The signed permit must be brought by the applicant or his agent to the forestry field office indicated. Payment of \$10.00 per cord will be due at that time. Failure to return the permit for validation will result in loss of cutting privileges.

"Permits are issued over the entire 12-month period," said Babcock, "and although ice, snow, mud, and other unusual conditions are considered, no guarantee is made as to a specific time of year or for a particular cutting loca-

tion. Permittees are allowed 21 days to harvest two cords and 60 days to cut five cords.

"The Bureau of Forestry also sells wood to commercial operators in lots of 25 cords or more," he said. "Large volume sales are in areas that are not readily accessible, usually require specialized harvesting equipment, and do not reduce the number of lottery permit areas available."

Applications must be picked up at field locations and should be submitted as soon as possible. ■

Long Island Sound Conference

The Long Island Sound Taskforce of the Oceanic Society (LIST) will hold the 11th annual State of the Sound Conference, Saturday, March 11, at Quinnipiac College in Hamden, from 9:00 a.m. to 3:30 p.m.

This year's conference, co-sponsored by Quinnipiac College and a host of environmental organizations, will focus on data collection, computer modeling, and public participation in the Long Island Sound Study, the status of wetlands and watersheds, and the medical waste problem. Speakers include: John St. John of Hydroqual; Dr. Barbara Welsh, UCONN Avery Point; and Richard Harris, a LIST trustee and vice-president of Saugatuck Valley Audubon.

Registration, including lunch, is \$20 for members of the Long Island Sound Taskforce, \$25 for non-members, \$15 for students and seniors with valid ID. For more information, call the Long Island Sound Taskforce at (203) 327-9786. ■

Correction

In the February 1989 issue of *Connecticut Environment*, the name of Ronald Chernovetz was misspelled. Sorry, Ron. You deserve better. ■

The Night Sky

The Paradox of the Dark Night Sky

by
Francine Jackson

IN 1823, WILHELM OLBERS looked up at the nighttime sky. Although people had been doing that for millennia, he had an inspiration: Why was the sky dark? Surprisingly, this question isn't really as stupid as one might think. Olbers argued that if our universe were infinite, as believed, then the sky should be "ablaze with stars." If everywhere we look there are stars, why aren't they shining brightly enough to counteract the loss of the sun?

To use an example, let's pretend we're in the middle of a forest. Let's also assume that all the tree trunks are painted white. In every direction we look, there will be trees. Where there are gaps between trees, these are filled in by background trees, so that every-

where you look, you will see trees. Because the trees are painted, anywhere you look, you should see white.

The same is true of the sky. From our observations, we can conclude that



the universe is uniformly distributed. Everywhere we turn, there should be stars. Of course, the intensity of a star's brightness should decrease as the distance of a star from the Earth increas-

es, but the number of stars should increase with distance. Therefore, although the light is weaker with the greater distance, there should be more stars to contribute light. Therefore, the night sky should be as bright as day.

And how do we resolve what is now called Olbers' Paradox? Quite frankly, we can't. Astronomers are still trying to come up with a truly logical — and scientific — conclusion. Some feel that the wavelengths of the starlight are shifted, that they shift to wavelength invisible to the human eye. But, if that's true, then all wavelengths should be shifted, and some should replace those lost in the visible spectrum. Another idea is that dust and gas present in space can absorb the light. But, if that's true, then those dust and gas clouds themselves should glow, making up for any lost starlight. Perhaps the universe is curved to an extent that light from distant stars isn't reaching the Earth. On these March evenings, when the brilliant winter stars are being replaced by a darker spring sky, look up and try to form your own conclusions, for after all these years, Olbers' Paradox still needs an answer. ■

Letters to the Editor

The finest government publication I have ever read. Hope the quality keeps up for at least two more years, but I'm afraid the staff will leave for *The New York Review*.

Cornelius J. Scanlon
Simsbury

The article, "A Man for all Critters," by Laura Blake was extremely timely, especially with the terrific loss of wildlife habitat in recent years. The incidence of quadrupeds in urban areas will only continue to increase.

Our group in Plainville also believes that Connecticut residents should not have to pay for the removal of so-called "nuisance wildlife." To us, there is no such thing. These creatures deserve a chance, but paid

"volunteers" are not the answer. Every local conservation commission could be utilized to supplement the DEP in a state-wide program — at no cost to residents.

Our admiration and and plaudits go out to Skip Hilliker — he's our kind of conservationist.

Alfred J. Mastrianni
Plainville

A wide variety of great reading. I particularly enjoy "The Night Sky." I wish the article on the planets by Francine Jackson could have been printed in advance, as I received the January issue in February.

Margaret Murphy
Rocky Hill

We received quite a few letters about our late January issue. Old subscribers know that this is a problem we've been working on, generally successfully, for a long time. However, sometimes things happen — or don't happen — and an issue goes out late. All we can do is apologize and try to do better next time. Thanks for your patience. Ed.

Endnote

"How wondrous this, how mysterious. I carry wood, I draw water."

Layman P'ang



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